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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,464	10/22/2003	Nobuaki Kamiyama	9319G-000581	7325
27572	7590	09/08/2005		
HARNES, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				
			EXAMINER LEBRON, JANNELLE M	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/691,464	Applicant(s) KAMIYAMA ET AL.	
	Examiner Jannelle M. Lebron	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application:
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/16/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 10/24/02 and 8/26/03. It is noted, however, that applicant has not filed a certified copy of the 2002-309584 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

2. Claim 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 13, it is unclear what the metes and bounds of "a device manufactured by the device manufacturing apparatus" are.
3. Regarding claim 14, it is unclear what the metes and bounds of the claimed "a device manufactured by the device manufacturing method" are.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent,

except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 10-12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Bruch (US Patent 6,814,422).

6. Bruch discloses a device manufacturing method comprising:

a step of discharging a droplet containing a functional material onto a substrate [column 6, lines 17-22] by means of a discharge nozzle [410] in a discharge head [400];

a carrying step of carrying said substrate [column 6, lines 63-65]; and

a detection step of detecting a discharge condition of said droplet which is discharged from said discharge nozzle, during a carrying operation of said substrate [column 3, lines 24-27].”

7. In regard to claim 11, Bruch teaches a “device manufacturing method comprising the steps of:

emitting detection light towards a receiver [column 10, lines 34-41]; and

determining whether said droplet is being discharged from said discharge nozzle, based on changes in the intensity of said detection light received by said receiver due to said droplet passing through the optical path of said detection light [column 10, lines 41-46].”

8. In regard to claim 12, Bruch discloses a device manufacturing method “wherein calibration of the receiver is performed at a predetermined timing.” The detector

measures the change in receiver output and thus performs a calibration prior to detecting the change, as the base level must be ascertained to detect a change.

9. In regard to claim 14, the product of Bruch meets the claimed "device manufactured."

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-5, 7-9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parks (US Patent 5,216,442) in view of Bruch (US Patent 6,814,422).

12. Parks discloses "a device manufacturing apparatus [10] comprising:
a discharge head [18] for discharging a droplet containing a functional material;
a stage [12] for supporting a substrate on which said droplet is discharged, and
which is capable of moving relative to said discharge head [column 6, lines 38-40];
a carrier [22] for carrying said substrate."

Thus Parks meets the claimed limitations except “a detector for detecting a discharge condition of said droplet which is discharged from a discharge nozzle formed in said discharge head; and

a controller for executing a detection operation by said detector during a carrying operation of said substrate.”

13. Bruch discloses an ink droplet detector that “checks if any of the nozzles [410] of the printhead [60] are malfunctioning [column 3, lines 24-27]” and which is driven in response to a signal from the controller [30].”

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a printing system that included an ink droplet detector with its corresponding controller. One would have been motivated to modify Parks to decide whether or not to execute a recovery service as taught by Bruch, thus improving quality.

14. In regard to claim 2, when modifying Parks to include Bruch one would have included “a light emitter [460] for emitting a detection light; and a receiver [450] for receiving said detection light emitted from said light emitter [460]; wherein said receiver [450] determines whether said droplet is being discharged from said discharge nozzle [410], based on changes in the intensity of said detection light received by said receiver due to said liquid passing through the optical path of said detection light [column 10, lines 41-46].”

15. In regard to claim 3, Bruch teaches a detector that measures the change in receiver output and thus performs a calibration prior to detecting the change, as the base level must be ascertained to detect a change.

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16. In regard to claim 4, Bruch teaches a device manufacturing apparatus comprising a "recovery unit [80, 82, 84, 86] for performing a recovery operation of said discharge nozzle [column 8, lines 32-35]."

17. In regard to claim 5, Bruch teaches a device manufacturing apparatus comprising a controller that "performs said recovery operation corresponding to detection results of said detector, and reexecutes detection a predetermined number of times [column 15, lines 19-22]."

18. In regard to claim 7, Bruch teaches a droplet detector and a print media handling system provided at different locations. When modifying Parks to include the Bruch detector, one would have located the detector remote from the printing area so that ink from testing does not damage the media.

19. In regard to claim 8, Bruch teaches a device apparatus with "two or more" discharge heads [50, 52, 54, 56].

20. In regard to claim 9, the device produced by Parks in view of Bruch is a so-called "optical element".

21. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parks (US Patent 5,216,442) in view of Bruch (US Patent 6,814,422) and Hah (US Patent 6,371,590).

22. Parks discloses "a device manufacturing apparatus [10] comprising:
a discharge head [18] for discharging a droplet containing a functional material;
a stage [12] for supporting a substrate on which said droplet is discharged, and
which is capable of moving relative to said discharge head [column 6, lines 38-40];

a carrier [22] for carrying said substrate.”

23. Bruch discloses “a detector [column 3, lines 24-27] for detecting a discharge condition of said droplet which is discharged from a discharge nozzle [410] formed in said discharge head [60]; and

a controller [30] for executing a detection operation by said detector during a carrying operation of said substrate.” Also, Bruch teaches a “status display portion [32].” Thus Parks in view of Bruch meet the claimed limitations except a display device “for displaying detection results of said detector, and an error based on the detection results.”

24. Hah teaches a display device that displays “an error message when at least one nozzle is malfunctioning, the quantity of malfunctioning nozzles in the printhead, the quantity of functioning nozzles in the printhead and which individual nozzles are malfunctioning, if any [column 5, lines 5-14].”

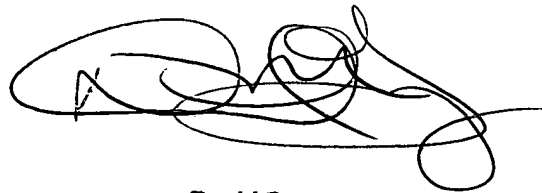
It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a printing system with droplet detection means and a display device for displaying detection results. One would have been motivated to modify Parks and Bruch in order to discover the presence of malfunctioning nozzles as taught by Hah.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jannelle M. Lebron whose telephone number is (571) 272-2729. The examiner can normally be reached on Monday thru Friday 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jml

A handwritten signature in black ink, appearing to read 'David Gray', with a large, stylized flourish extending to the right.

David Gray
Primary Examiner